

# **EMPLOYMENT OF LIGHT INFANTRY IN CONTINGENCY OPERATIONS: WHAT DO WE DO WITHOUT LIGHT ARMOR**

**A MONOGRAPH  
BY  
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Infantry**



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## ABSTRACT

EMPLOYMENT OF LIGHT INFANTRY IN CONTINGENCY OPERATIONS.  
WHAT DO WE DO WITHOUT LIGHT ARMOR? by Major Marshall A.  
Hagen, USA, 55 pages.

Cancellation of the Armored Gun System (AGS) and the deactivation of the 3-73<sup>rd</sup> Armor Battalion has left the U.S. Army force structure without air droppable light armor to support contingency operations. Because of this, the contingency force commander and planner must address the question of "What do we do now?" This monograph examines this question and attempts to fill the void left by light armor with technology and the efforts of a joint/combined arms team.

In understanding the extent of the void left by light armor this monograph addresses light infantry and light armor to analyze what, specifically, each brings to a contingency operation (strengths and limitations). Operation Just Cause and lessons learned from Combat Training Centers (CTCs) are examined to review how light armor has been used effectively, and to identify current trends in the employment of light infantry and armor as a combined arms team.

The U.S. Army expects to fill the immediate void left by light armor through the fielding of the Javelin anti-armor weapon system, employment of the AH-64 Apache, and with the strategic airlift of the Immediate Ready Company (IRC) from the 3<sup>rd</sup> Infantry Division (Mechanized). Future contingency operations will be supported with the RAH-66 Comanche attack helicopter, the Enhanced Fiber Optic Guided Missile (EFOGM), and possibly the Line of Sight Anti-Tank (LOSAT) weapon systems. Additionally examined in this monograph is the use of USMC LAV-25s to augment a U.S. Army contingency force.

This monograph concludes that the U.S. Army's cancellation of the AGS and the deactivation of the 3-73<sup>rd</sup> Armor Battalion has not reduced our ability to conduct contingency operations. Employment of our technological advantage in anti-armor weapons, attack aviation, and strategic airlift can set the conditions for the use of light forces in any contingency scenario. If light armor is required for forced/early entry operations, the USMC LAV-25 is appropriate for the mission. It is air droppable, provides ample firepower and protection, and proved to work effectively with U.S. Army light infantry forces during Operation Just Cause. The challenge to the commander is our ability to operate as a heavy/light combined arms team and to understand and employ our technological advantage.



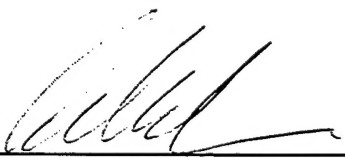
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## Part 1: Introduction.

*The U.S. Military will be called upon to respond to crises across the full range of military operations, from humanitarian assistance to fighting and winning major theater wars, and conducting concurrent smaller-scale contingencies. Our demonstrated ability to rapidly respond and to decisively resolve crises provides the most effective deterrent and sets the stage for future operations if force must be used.<sup>1</sup>*

National Military Strategy of the United States.

February 1997.

Light infantry forces are the U.S. Army's most strategically deployable force. They are capable of conducting operations in virtually any terrain, and are especially tailored to fight low-to-mid-intensity level threats. But they have limitations. The most obvious is the lack of firepower and protection inherent to an armored force.

As U.S. military forces continue to face a wide range of global contingencies, they must remain organized and equipped to respond across the entire spectrum of operations. This spectrum includes conflicts ranging from crudely equipped insurgents to a technologically advanced conventional force. Also included are military organizations of developing nations capable



of fielding multi-battalion sized armored forces, many equipped with at least 105mm main guns and modern fire control systems.<sup>2</sup>

The initial objective of forced or early entry operations is to secure a useable airstrip to facilitate the introduction of follow-on forces into the operation. This is essential to mission success. The cancellation of the Armored Gun System (AGS) and deactivation of the 3<sup>rd</sup> Battalion, 73<sup>rd</sup> Armor Regiment of the 82<sup>nd</sup> Airborne Division have left light forces without armor support for the initial stages of early or forced entry operations. The initial lack of armor limits the flexibility of the tactical commander until that objective is secured and armor forces arrive.

In lieu of light armor as a force multiplier during the initial stage of contingency operations, the challenge for the U.S. Army is projection of the right force mix, at the right time, to influence the battlefield. Attack helicopters, USAF close air support, and anti-armor weapons systems are probably the best answers to fill the void of light armor.

*American success in operations JUST CAUSE and DESERT STORM has prompted many countries to upgrade their armored forces. Modern armor is now for sale on the open market. Infantry units can expect to face a tougher, harder to defeat, armored threat in the future.<sup>3</sup>*

With the elimination of light armor, the U.S. Army has accepted a window of risk during contingency operations that extends from the initial



commitment of light forces to the introduction of armored forces by strategic airlift into the theater of operations. Light armor adds to the light infantry's capability to fight against a variety of threat forces. If the U.S. wants to compensate for smaller forces and declining defense spending, it must tailor its use of technology to deal with the most likely contingency requirements.<sup>4</sup>

The bottom line on light armor is that it is out of the U.S. Army's force structure, and will probably remain so for the foreseeable future. So what are our options now? How does the U.S. Army set the conditions for the tactical commander's success in contingency operations without light armor? Under the current force structure, the U.S. Army potentially faces a future contingency operation that may require light infantry forces to slug it out with an armored enemy force employing anti-armor weapons, while waiting for armor to arrive on USAF aircraft.

The Army's solution to fill the void left by the cancellation of the AGS and deactivation of the 3-73<sup>rd</sup> AR BN is the rapid deployment of an M-2 Bradley Fighting Vehicle, M1A1 Abrams main battle tank equipped Immediate Ready Company (IRC) from the 3<sup>rd</sup> Infantry Division (Mechanized) to augment the contingency force. The IRC is required to be "wheels up," that is, loaded on an aircraft enroute to a mission within 18 hours of orders. It deploys with five days of ammunition and sustainable supplies.<sup>5</sup> Additional ground combat vehicles and attack helicopters (AH-64s, and AH-58s) are then flown in to support light contingency forces.<sup>6</sup>



The IRC's biggest drawback, compared with either the Sheridan or the AGS, is that neither the Abrams nor the Bradley can be parachuted into battle. Therefore a sizable airfield must be seized or controlled by friendly forces before the IRC can be deployed.<sup>7</sup>

Light contingency forces require the employment of our technological advantage to conduct forced or early entry operations, seize H-hour objectives, and set the conditions to build combat power. It will take a joint/combined arms effort to fill the void of light armor. Only then will the contingency force commander have the flexibility, agility, and initiative to accomplish the mission, quickly, decisively, and with the least cost to U.S. soldiers.

The methodology of this study is three fold. First, it examines the characteristics of light infantry and armor, and their employment in contingency operations. The intent of examining light infantry and armor is to better understand what they bring to contingency operations, how they complement each other, and apply this knowledge to implementing solutions to filling the light armor void in future contingency operations. Second, the paper analyzes Operation Just Cause and the light/heavy lessons learned from the Combat Training Centers (CTCs), to identify strengths and weaknesses in the employment of armor with infantry, both physical and institutional. Finally, it analyzes what the latest technology can contribute to contingency operations and how they can be employed to fill the void left by light armor. This study concludes with findings that support the



U.S. Army's ability to close the window of risk "left open" to contingency forces with the cancellation of the AGS and deactivation on the 3-73<sup>rd</sup> AR BN. Additionally, this study provides recommendations for the commander and planner that maximize the rapid deployment strengths of the United States Army, Marines, and Air Force in a joint/combined arms effort. Filling the light armor void is the challenge. Maintaining the tactical commander's flexibility, agility, and initiative to accomplish the objective is the goal for future contingency operations.



## **Part 2: Employment of Light Infantry Forces.**

### **Role of Light Infantry Forces.**

In the early 1980's, the U.S. Army recognized the need for light, rapidly deployable forces. The force structure of the light forces was designed to create a force capable of fighting in a low or mid-intensity conflict against a non-mechanized force. Like their counterparts of WWII, the light infantry forces of today do not have large quantities of vehicles or armored fighting systems to engage heavily armored forces.<sup>8</sup>

The operational concept of light infantry was developed out of the belief that high-intensity conventional conflict in Europe was unlikely and that future threats to vital U.S. interests would be manifested in low-intensity conflict.<sup>9</sup> Along with this belief, U.S. planners began to fully appreciate the limitations of U.S. strategic mobility and the need for lighter, more deployable units. The international crises of 1979-1980, when the Carter administration contemplated responses to the Soviet Union's invasion of Afghanistan and other events, forcefully reaffirmed the need for rapidly deployable American forces.<sup>10</sup>

In the post Cold-War environment the role of the U.S. Army has expanded to meet the increasing demands that include operations of war,



peacekeeping, peacemaking, humanitarian relief operations, demonstrations, shows of force, and contingency operations. Light infantry forces provide the Army with a versatile, strategic force projection and forcible entry capability<sup>11</sup> to accomplish this variety of missions.

#### Force Projection:

Attainment of our National Military Strategy objectives requires a force projection capability that can respond rapidly to threats against national interests anywhere in the world, and provides national leaders the option of responding to crises with tailored infantry, armor, airborne, and air assault forces--capable of delivering decisive victory across the spectrum of conflict.<sup>12</sup>

Light infantry forces are our most rapidly and strategically deployable forces--capable of fighting as part of a larger force in conventional conflicts, or conducting missions as part of a joint force in operations other than war (OOTW). The light infantry can exploit the advantages of restricted terrain, can mass through the combined effects of synchronized small-unit operations and fires, and has a command and control structure that readily accepts task organization of forces for virtually all situations.<sup>13</sup>

The light infantry fills the demands of a force projection army. They are highly trained units, prepared to deploy and conduct military operations in 18 hours. They are adaptable and tailorable to rapidly deploy anywhere in the world with unquestionable versatility. They can conduct a wide variety



of operations from peacekeeping to combat operations, and are readily subject to task organize into unique task forces to meet a number of tactical situations. They have the capability to operate as a combined or joint team that delivers the right mix to project a viable force for a variety of situations.

#### Light Infantry Capabilities/Limitations.

The light infantry brings unique capabilities and limitations into contingency operations. Its most prominent capability is its rapid deployability of a tailored force into a variety of situations. Its limitations include its lack of mobility and its lack of armor.

Light forces throughout history have been used sometimes successfully, sometimes unsuccessfully. The experience of past wars points to one overriding lesson: When light infantry units were used in combat because their capabilities and advantages fit the requirements of the role, they performed well. When they were used as cheap, catchall substitutes irrespective of the mission, they failed. The strong implication is that light infantry of any sort must be designed for reasonably specific missions.<sup>14</sup>

When Iraq invaded Kuwait on 2 August 1990, President Bush responded with the deployment of U.S. air, naval, and ground forces. The initial ground force was the division ready brigade of the 82<sup>nd</sup> Airborne Division. They were selected for deployment because they were rapidly deployable and could demonstrate U.S. resolve in the region. They were followed by a brigade task



force from the 101<sup>st</sup> Air Assault Division with mobility provided by helicopters and tank-killing ability of the Apache attack helicopter.<sup>15</sup>

Operation Desert Shield demonstrated the value of employing the right force mix in contingency operations. The rapid deployment forces of light infantry, light armor, attack aviation, and the USAF proved a capable armor killing force that deterred the Iraqi Army from continuing its attack into Saudi Arabia.

The largest deficiencies of light infantry forces are within their structure; specifically, their lack of armor and a CSS system that's insufficient to support the attachment of armor units. Since virtually all future contingency operations will encompass the task organization of armor/mechanized units to light infantry forces, it is important to consider the following planning factors:

- The size and mission of the force.
- The location of the deploying unit in relation to its parent unit.
- The support capability of the light force to which the deploying armor force will be assigned.
- The source of support requirements for light/heavy forces.
- The self-sustaining capability of the deploying force.

These considerations are not all inclusive and will vary based on METT-T, support requirements, and the tactical situation.<sup>16</sup>



The assignment of armor to light infantry for contingency operations requires careful thought and planning. Light infantry may require additional ground transportation assets when conducting extended operations, or increased equipment densities may exceed the maintenance capabilities of the light force and require additional assets.<sup>17</sup>

In future contingency operations, mobility, protection and firepower of light infantry will be a critical factor. Mobility on the future battlefield is essential to the survival of the Army's light infantry. As in World War II, light and heavy forces must be prepared to fight and win alongside each other.<sup>18</sup>

#### Contingency Operations.

Due to uncertainty, contingency operations require rapid planning, response, and development of special procedures to ensure the readiness of personnel, support agencies, and equipment.<sup>19</sup> Contingency operations are conducted in all environments. They range from deterrence operations, such as a show of force, to combat operations, which can be conducted under hostile or nonhostile conditions. Contingency operations also include civil military or peacekeeping activities either as a deterrent or subsequent to combat operations.<sup>20</sup> Contingency operations are inherently joint and involve the projection of CONUS-based forces into a CINCs AOR.<sup>21</sup>



Since 1980, the U.S. has deployed light infantry forces in at least six contingency operations. These operations were:

1983	Urgent Fury	Grenada
1988	Golden Pheasant	Honduras
1989	Just Cause	Panama
1990	Desert Shield	Saudi Arabia
1992	Restore Hope	Somalia
1994	Uphold Democracy	Haiti

These operations display two critical factors that will continue to affect the employment of light infantry forces. First is the light infantry's reliance on the employment of heavy or light armor to support the contingency operation. In all operations, with the exception of Operation Urgent Fury, light or heavy armor was employed to support the tactical plan. The second factor is the mission diversity between the operations, from humanitarian assistance to war, jungle to desert, or village to city. Each operation required a tailored joint/combined force to face the unique challenges of the environment and mission.

These factors reflect the challenges faced by commanders and planners as they try to fill the void of light armor with new anti-armor weapons systems, attack aviation, an armored IRC, or possible light armor under operational control (OPCON) from the USMC.



### Tactical Concerns and the Dynamics of a Changing Environment.

Tactical concerns of contingency operations have changed with the cancellation of the AGS and the deactivation of the 3-73<sup>rd</sup> AR BN. Contingency commanders and planners are now faced with the challenge of conducting forced or early entry operations without the support of light armor. This opens up a window of risk for light contingency forces that begins with their commitment on the ground and ends with the arrival of armored forces by tactical or strategic airlift.

The Army expects to reduce this risk through the rapid deployment of the mechanized/armored IRC from the 3<sup>rd</sup> Infantry Division (Mechanized), employment of attack aviation, and the fielding of the Javelin Anti-armor weapons system. Orchestrating these assets into the ground tactical plan to cover the loss of light armor will be the greatest concern for commanders and planners of future contingency operations.

A changing environment also compounds the difficulties of future contingency operations. Light infantry forces are expected to conduct operations in three diverse environments: war, conflict, and peacetime.<sup>22</sup> Although technology has improved the adaptability and lethality of the light infantry in these environments, it has also worked to the advantage of our potential enemies.



Light infantry forces fill the demands of a force projection army. Their ability to rapidly deploy and conduct a variety of operations is evident in the contingency operations they've conducted since 1980. They are flexible and tailorable for virtually any situation, yet they have limitations; the biggest are the lack the mobility, firepower, and protection of light armor. This is a growing concern to commanders and planners as the lethality of our enemies continues to improve with technology, and the changing environment continues to expand the range of possible contingency operations. Effects of technology and the changing environment emphasize the need to support light contingency forces with armor in most future contingency operation scenarios.



### **Part 3. Employment of Armor in Contingency Operations.**

*It has been said that a platoon of armored vehicles deployed on the first day of a crisis in a contingency operation can be of greater value in bringing about a quick and desirable end to conflict, than the value of two hundred tanks on day thirty.* <sup>23</sup>

*White Paper, Armor 2000.*

#### **Tactical Value of Armor to Light Infantry Forces.**

Armor increases the contingency force's mobility and lethality immediately upon deployment. It provides accurate, destructive fires that the tactical commander can use to shape the battlefield, defeat the enemy, or fill the gap until other armored forces arrive.<sup>24</sup> Additionally, it offers vastly superior mobility on a battlefield strewn with wreckage, unexploded ordnance, broken glass, and other debris. Its mobility makes armor useful in route proofing and clearing, convoy escort, and recovery operations, and provides light forces with a strategically and tactically mobile system with an abundance of firepower. Using it in a variety of ways as METT-T dictates can only enhance contingency operations.<sup>25</sup>



Armor provides flexibility to the contingency force commander, and allows him the ability to take the initiative with support to the close fight with accurate anti-armor and direct fires in a forced or early entry role. Armor is versatile in that it can be employed during initial stages of contingency or reinforcing operations, or deploy as tailored armor and/or reconnaissance packages with inherent C2 and logistical support. Tactically, that adds agility to any combat situation by permitting rapid movement and limited penetrations, or exploiting success and pursuing defeated enemy elements as part of a larger force.<sup>26</sup>

A viable, often underestimated, attribute of light armor in contingency operations is the shock effect and intimidating presence it has on the enemy. Although shock effect cannot be measured, it is definitely accomplished with the introduction of armor in a low-intensity environment.<sup>27</sup> John A. English in his writing "*On Infantry*", focuses on the inception of infantry and armor doctrine. Although infantry and armor doctrine has since changed, a critical factor which remains inherent with the employment of armor is the shock effect it brings to the battlefield.

Armor can apply its capabilities to conduct combat operations, often in support of contingency plans, across the operational continuum (peacetime, conflict, and war). It can operate in a wide range of political, military, and geographical environments to conduct tactical missions to include providing security, reconnaissance, and anti-armor firepower to light infantry forces, as



well as standard armor operations to engage and destroy enemy forces using mobility, firepower, and shock effect.<sup>28</sup> The utility of mobility, shock action, and firepower of armored forces in contingency operations is not new. J.F.C. Fuller's analysis of armor in contingency operations made over fifty years ago closely resembles today's requirement for armor.<sup>29</sup>

Combined arms operations employ armor and infantry in a variety of missions such as reduction of strongpoints, bunkers, and roadblocks; close assaults with light infantry; operations in built-up areas; defense with light infantry; force security; flexible, mobile reserve operations for the light infantry task force, brigade, division, and corps to provide rapid response to enemy mounted forces or rear area operations. Missions for armor forces in OOTW may include insurgency/ counterinsurgency; shows of force and demonstrations; noncombatant evacuation operations (NEO); emergency relief, strikes and raids; or peacekeeping and peace enforcement operations.<sup>30</sup>

#### Limitations of Armor in Contingency Operations.

The two primary limitations of armor in contingency operations are its air transportability and logistical support requirements. For contingency operation purposes, armor is completely dependent on Air Force assets for deployment to the theater of operations.<sup>31</sup> It requires a large number of aircraft to lift it into theater at a time when aircraft are critical to the generation of combat power. Each C-17 or C-5B sortie can only lift one M1A2



Abrams tank or two M2 Bradley fighting vehicles. Light armor is equally dependent on airlift but imposes less of a demand on strategic lift and can be moved to and around the theater with tactical air lift. Part 5 of this monograph discusses the specifics of heavy and light armor air transportability.

The second limitation of armor in contingency operations is logistical support. Armored units, task organized to support light infantry forces, require additional support from a forward support battalion (FSB) and division or corps combat service support (CSS) elements to sustain operations. Armor has moderate to high supply consumption rates, especially in Classes III, V, and IX, that can over burden the light CSS structure if proper planning and forecasting doesn't occur at all levels.

#### Tactical Options Lost with the Absence of Light Armor.

During contingency operations light armor provides the contingency force commander the options that capitalize on the characteristics of successful army operations as defined in FM 100-5: initiative, agility, depth, orchestration, and versatility.<sup>32</sup>

In the absence of light armor, the contingency force commander has a limited capability to exercise initiative that could set or change the terms of a contingency operation by action and a bold, offensive spirit <sup>33</sup> until the IRC arrives and is operational. The commander is limited in the degree in which



he can employ agility; agility that immediately seizes and holds the initiative through the most vulnerable phase of a contingency operation, initial entry. The commander loses the option to conduct deep ground maneuver with a combined infantry and armor strike force that sets the conditions for the close fight, i.e., airland of the IRC or follow-on infantry forces. The versatility light armor brought to contingency operations cannot be replicated by assets currently in the MTOE of light organizations, i.e., HMMWVs with .50 cal machine-gun or Mark 19 weapon systems. These assets lack the protection, mobility and firepower that light armor provided the commander. Finally, light armor provided the right force mix, operational control and operational tempo to allow a commander to orchestrate his forces to accomplish the purpose of the contingency operation.

Armor contributes much more to contingency operations than simply an anti-armor weapons system platform. Armor provides the tactical commander with the means of aggressively imposing his will on the enemy. It is a combat multiplier that gives the tactical commander the ability to be versatile, remain agile, and seize the initiative through mobility and the application of sufficient combat power at the decisive point in a battle.



#### **Part 4. What Have We Learned.**

This chapter studies the lessons learned from Operation Just Cause and rotations at the CTCs. It discusses how we employed armor in a successful contingency operation, and identifies adjustments the army's contingency forces must make to be more effective in infantry/armor combined arms operations.

##### **Operation Just Cause.**

Operation Just Cause provides an excellent study about the employment of armor in contingency operations in Panama. Light armor was employed in a wide and varied range of operations and performed the roles of reconnaissance, security, and support of dismounted maneuver. These roles were performed primarily in an urban environment.<sup>34</sup>

Commanders task organized armor to support infantry platoon, company and battalion operations, conduct independent operations, i.e., route clearance, security operations, reconnaissance and virtually a myriad of tasks/missions as required by the situation. In total, three different armored systems supported infantry units during operation Just Cause: M551 Sheridan Armored Reconnaissance Vehicles from the 82<sup>nd</sup> Airborne Division;



M113 Armored Personnel Carriers from the 5<sup>th</sup> Infantry Division (Mechanized); and LAV-25s from the United States Marine Corps.

The battle for Panama City included a majority of the 27 separate targets planned for Operation Just Cause. The urban battle that was fought by the U.S. included light infantry, mechanized infantry and light armor forces from the U.S. Army and U.S. Marine Corps.<sup>35</sup> Integration of light and heavy forces was common throughout all commands during Operation Just Cause. The very limited PDF armor threat allowed Joint Task Force South to attach sections of Sheridans across the command rather than concentrating them in company and platoon strength under their parent organization, the 82<sup>nd</sup> Airborne Division. This concept of employment allowed the simultaneous engagement of many of the D-Day targets by the infantry, supported by the shock effect and firepower of a mobile protected gun system. The shock effect and firepower had a decisive effect in military operations on urbanized terrain (MOUT) fighting, at roadblocks, and for fixed site security and convoy escort.<sup>36</sup>

U.S. units also employed Sheridans and LAV-25s to escort convoys, conduct noncombatant evacuation operations, overwatch passage of lines, support link up operations, and as a show of force. Light armor was important in a show of force role because it discouraged sniping, looting, and general civil unrest.<sup>37</sup>

Light armor was critical for the success to light infantry in the built up areas of Panama City. This was especially true because of the ROE.



Sheridans provided the only timely and precise heavy direct fire support. The 105mm towed howitzers were too slow to move and employ. The ROE, difficulty of avoiding ground fire, and problems identifying targets in the MOUT environment limited aviation support.<sup>38</sup> Sheridans supported the light infantry fight in Panama City by providing direct fire support to infantry that was capable of penetrating reinforced concrete buildings.<sup>39</sup> Sheridan tanks had a tremendous psychological effect on PDF snipers, and their presence discouraged PDF soldiers from resisting.<sup>40</sup>

The success enjoyed by the combined arms employment during Operation Just Cause was mainly due to surprise, overwhelming firepower, discipline of U.S. soldiers, and the weakness of the enemy.<sup>41</sup> Armor demonstrated its effectiveness in providing the Joint Task Force commander immediate mobility, shock action and firepower at the decisive point in the operation. Additionally, armor proved its significance in contingency operations by performing multiple, simultaneous missions of reconnaissance, security and direct support to light infantry forces.

#### Combat Training Centers.

At the Combat Training Centers (CTCs), infantry and armor commanders work together, often for the first time, to solve demanding tactical problems against a “world class” OPFOR. The emphasis at CTCs is joint/combined



operations from the Brigade Task Force level on down to the company level. To be successful against the OPFOR, combined warfighting is a must.

*“Your infantry on my infantry, I’m going to win. Your artillery on my infantry, I’m going to run. Your helicopters on my infantry, I’m going to hide. But any two of those combined, or even worse, all three combined on my infantry, I’ll lose every time.”<sup>42</sup>*

Former JRTC OPFOR Commander, LTC Sittnick.

Although LTC Sittnick did not include the employment of armor in his comment, he just as well could have. Armor employed as part of a combined arms team against infantry forces, dismounts, insurgents, etc., has a devastating effect. Armor or mechanized assets can be very effective as a finishing or fixing force in a low-intensity environment.<sup>43</sup>

CTCs present heavy/light lessons learned and trends that can be applied throughout all levels of command in all contingency units in the U.S. Army. Significant for the contingency force commander is our track record of operating as a combined arms team; specifically, the trends of employment of armor, and the understanding of the capabilities and limitations of heavy and light forces. The most difficult combat task for a maneuver commander is to integrate and synchronize combat power at the critical time and place. In order to accomplish this, it is essential that the maneuver commander understands the capabilities and limitations of his



forces. This is exceptionally true for light-heavy and heavy-light combined arms operations.<sup>44</sup> Contingency environments that require heavy/light task organizations are driven by METT-T. Figure 4.1 establishes the conditions favorable for heavy/light contingency operations.

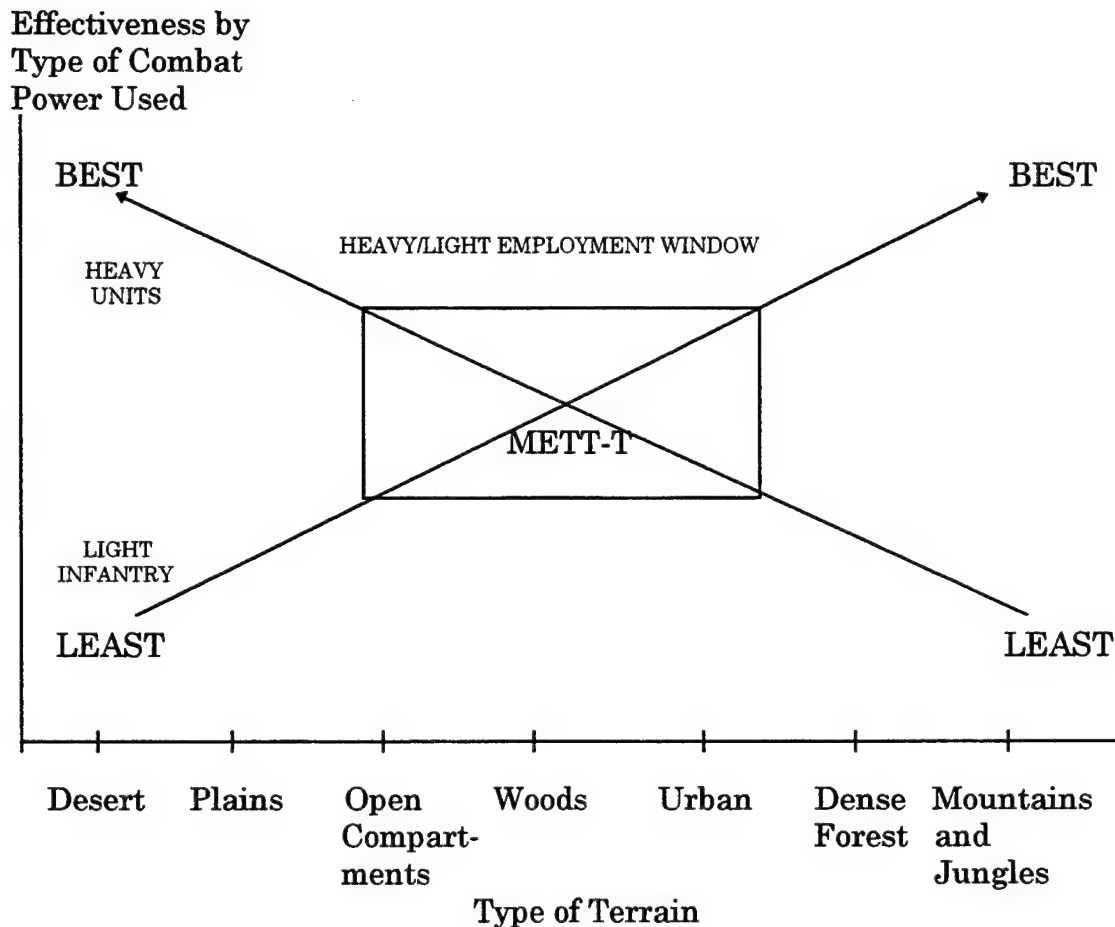


Figure 4.1. Strengths and weaknesses of heavy/light forces.<sup>45</sup>

Combined arms teams with heavy and light forces create a force that is less restricted by terrain; that fights in all conditions of visibility and



weather; and that can aggressively seek out and destroy the enemy when he is most vulnerable. The combined effects of mixing heavy and light forces creates a force stronger than the individual parts.<sup>46</sup>

Commanders understand the principles of employing light and heavy forces. What commanders fail to comprehend are the techniques, capabilities, and limitations of the armored force; "...light units normally do not understand what tanks, Bradley's and mechanized engineers can do for them."<sup>47</sup> Therefore the capabilities of armor and mechanized forces are often not maximized at the JRTC.

Few task organizations are more difficult to focus towards accomplishing a commander's intent than a heavy/light force mix. In no other operation is knowing the capabilities and limitations of your force more critical than during contingency operations.

*Know your enemy and know yourself. One who knows the enemy and knows himself will not be endangered in a hundred engagements. One who does not know the enemy but knows himself will sometimes be victorious, sometimes meet with defeat. One who knows neither the enemy nor himself will invariably be defeated in every engagement.*<sup>48</sup>

Sun Tzu.

Light units are improving the integration of the heavy team into offensive operations at the JRTC. More and more, the heavy team is being used in the



main effort in the brigade's main attack. As part of the brigade's plan, the heavy team is given the task of attacking through the main objective using its superior fire power, protection, and mobility to significantly reduce resistance on the objective.<sup>49</sup>

Lessons learned and trends from the CTCs indicate our lack of experience in understanding the capabilities, limitations and various employment considerations of armor, and highlights the need to practice the basic concept of training as we will fight future contingency operations. Leaders at all levels must understand the ranges, effects, and employment considerations for every weapon they have available to their force. Leaders who fail to know the capabilities of their force cannot maximize the power of the force against the enemy.<sup>50</sup>

CTCs have uncovered lessons learned and trends which will lead to effective employment of armor, and better training of leaders. Additionally, CTCs reinforce the need for an effective working relationship between heavy/light contingency forces that could realistically be placed in a "real world" contingency operation as a task force organization in 18 hours.



## **Part 5. Filling the Void through Technology.**

This chapter will review the capabilities the Army lost with the cancellation of the AGS, and discuss the capabilities and limitations of current technological developments that have been fielded in the U.S. Military, and what the Army plans to field to contingency forces to fill the void left by light armor. This chapter also presents the argument that if the army needs light armor for a contingency operation, it should get it (OPCON) from the USMC.

The U.S. Army has opted to fill the void of light armor through technology: (1) with the fielding of the Javelin anti-armor weapons systems; (2) improvements to the current attack aviation fleet, AH-58D, AH-64C and AH-64D (Longbow); (3) development of the RAH-66 Comanche; (4) enhancements in strategic airlift provided by the new fleet of C-17 Globemaster III aircraft; and (5) development of the Enhanced Fiber Optic Guided Missile (EFOGM) and Line-of Sight Antitank (LOSAT) anti-armor systems.

The other course of action available to fill the void is through the employment of USMC light armor. Working as a joint team, the U.S. Army/USMC could minimize the window of risk to contingency forces by employing LAV-25 equipped units under the operational control of the



contingency force commander for forced or early entry operations. The General Motors Light Armored Vehicle (LAV) currently in the USMC force structure could be employed immediately with U.S. Army light contingency forces, as was the case during Operation Just Cause.

#### Capabilities Lost with the Cancellation of the AGS.

The AGS was developed with a primary role of providing direct fire support for light infantry contingency forces against armored vehicles, bunkers and buildings.<sup>51</sup> The AGS was developed with tactical, operational, and strategic airlift capabilities that would allow it to be employed or moved throughout all levels of the operation. For example, as many as three M8, AGSs can be strategically airlifted in the C-5B or C-17 transports, and two in a C-141B. C-130 theater transports can carry a single AGS, and can deliver the lightest version using low velocity air drop (LVAD) procedures.<sup>52</sup>

The versatility of the AGS is in its three levels of modular add-on passive armor. To meet the demands of various airlift requirements, the AGS has four different configurations and three levels of armor protection, using add-on modular armor plates. For parachute delivery, the vehicle is stripped to a weight of no more than 17.8 tons and its height reduced to 92 inches by removing or retracting the commander's cupola. To conduct airland operations off a C-130, its weight could be increased to 19.2 tons, providing Level 1 armor protection against artillery fragments and small arms fire.



Airland operations from C-141, C-5B and C-17 aircraft allow for a maximum weight of 21.2 tons and Level 2 protection. Level 2 protection will protect against heavy machine gun and light cannon projectiles. The highest degree of protection, Level 3, is achieved at a combat weight of 24.8 tons. Even at this level, the AGS could not be expected to survive hits from cannon projectiles larger than 30 mm in caliber.<sup>53</sup>

The lethality of the AGS was designed around its 105mm soft recoil main gun. A stabilized fire control system provided rapid fire on-the-move capability from the commander's or gunner's day/night thermal sight system and integrated laser range finder that added significantly to the AGS's lethality.

The main gun is supplemented with a 7.62mm coaxial M240 machine gun, and the commander's station included a universal mount designed to accept various weapons, from the M2 .50 caliber machine gun for self air defense to the MK 19 grenade machine gun in urban operations.<sup>54</sup>

The AGS was not designed as a main battle tank. Although AGS's armament will thicken the missile-based antitank capability of the airborne and light infantry divisions, it lacks the armor and lethality to assume the primary role of tank destroyer or main battle tank.<sup>55</sup> What the AGS did provide the contingency commander was the means to immediately take the initiative in early/forced entry operations, exercise agility and remain versatile to face the various environments where commanders could expect to orchestrate future contingency operations.



## Javelin Anti-Armor Weapon System.

*Dismounted forces armed with the Javelin anti-armor missile can engage and destroy modern enemy tanks and armored vehicles from any direction and at a range safely outside the effective range of the armored vehicle's coaxial machine-gun.<sup>56</sup>*

Fielding of the Javelin anti-armor weapon system provides the light infantry contingency force with a revolutionary tank killing capability. The Javelin's dual-mode (top attack or direct fire), man portable antitank missile has an increased capability to engage and defeat tanks and other armored vehicles outside of effective coaxial machine-gun range.

Like the Dragon, the Javelin has a missile contained in a disposable launch tube/container and a reusable tracker. However, the Javelin is a fire-and-forget weapon system. This significantly increases gunner survivability because, unlike other systems, the gunner is no longer required to track the target for the duration of the missile's flight. Additionally, the Javelin has a soft launch that significantly reduces the visual and acoustical signature of the missile when compared to the Dragon.<sup>57</sup> Its soft launch capability enables a gunner to fire from within an enclosed area with a reduced danger from backblast over-pressure or flying debris.<sup>58</sup>

The Javelin replaces the Dragon on a one-for-one basis in infantry and engineer units with no additional changes in current force structure<sup>59</sup>. There



are six Javelin command launch units (CLUs) in each light infantry company. Basic load of missiles per company is twelve missiles<sup>60</sup>.

Javelin comprises two major tactical components: a reusable Command Launch Unit (CLU) and a missile sealed in a disposable Launch Tube Assembly. The CLU incorporates an integrated day/night sight and provides target engagement capability in adverse weather and countermeasure environments. The Javelin system weighs less than 49.5 pounds and has a maximum range in excess of 2,000m.<sup>61</sup> During the Javelin's Engineering and Manufacturing Development phase, 175 Javelin missiles were fired with a hit rate greater than 90 percent.<sup>62</sup>

The Javelin ATGM is primarily used to defeat main battle tanks and other armored combat vehicles, but has a moderate capability against bunkers, buildings, and other fortified targets commonly found in MOUT environments. The warhead of the Javelin can achieve significant penetration against typical urban targets. One limitation is that the Javelin missile, in the top attack mode, requires up to 160+ meters of overhead clearance. In the direct attack mode the Javelin missile requires up to 60+ meters of overhead clearance.<sup>63</sup>

#### Enhanced Fiber Optic Guided Missile (EFOGM).

The EFOGM system is a multi-purpose, HMMWV mounted, precision kill weapon system. The primary mission of the EFOGM is to engage and defeat



threat armored combat vehicles, other high value ground targets, and hovering or moving rotary wing aircraft that may be masked from line of sight direct fire weapons systems. In addition, the system can be used to surgically strike with minimal collateral damage. EFOGM is a day/night, adverse weather capable system that allows the maneuver commander to extend the battle space beyond line of sight to ranges up to 15 kilometers.<sup>64</sup>

Two EFOGM platoons of four firing vehicles and one non-firing platoon leader vehicle will be fielded to the XVIII Airborne Corps to participate in the Rapid Force Projection Initiative Advanced Concept Technology Demonstration scheduled to begin at Fort Benning, Ga., in July 1998. At the conclusion of the demonstration in 1999, the corps will receive another platoon, to give it a full company for a two-year "extended user evaluation" of the weapon. When the full company has been established, in late 1999, the unit will be considered deployable.<sup>65</sup>

#### Line-of-Sight Antitank (LOSAT) Weapons System.

The LOSAT, a kinetic energy missile, will provide a high volume of extremely lethal, accurate fire, effective against heavy armor systems at ranges exceeding tank main gun ranges. (end note, weapon systems, p. 207.)

The LOSAT is currently being tested from a Bradley Fighting Vehicle and modified HMMWV chassis'.<sup>66</sup> Tests in the early 1990s showed the missile, which travels at around a mile per second, to be devastatingly effective



against all armored targets. However, when the Army's Armored Systems Modernization program was restructured in 1991-1992, it was put in what is called the "tech base," essentially a back-burner position in the Army's procurement arena. The LOSAT has technological problems. Additionally, according to Major General Edward Anderson, assistant deputy chief of staff for operations and plans for force development, the LOSAT has the twin drawbacks of being very expensive and "a single-function system...It's only a tank killer." The Army is about a year away from deciding whether to produce LOSAT, meaning that it would be at least four or five years before the system is fielded.<sup>67</sup>

#### Attack Helicopters.

To rapidly build combat power in contingency operations, the U.S. Army can deploy attack helicopter flyaway packages on short notice.<sup>68</sup> Within 18 hours of notification, an AH-64 Apache company can be in the air enroute to any strategic destination where C-17 aircraft can land. The company-sized package includes eight Apache helicopters, 33 soldiers, and combat service support for maintenance operations. The package requires four C-17 sorties. Within 48 hours, an AH-64 battalion can be employed. This element is combined with the initial company, and possesses a total of 24 Apache helicopters, 301 soldiers, and combat service support. It can be deployed on eleven additional C-17 aircraft.<sup>69</sup>



The AH-64 Apache has the capability to fire 16 Hellfire missiles or 76 2.75-inch rockets and 1,200 rounds of 30-mm ammunition. With a full load, its operational range is 280 miles. With attachable fuel pods, the AH-64 Apache's operational distance can be expanded to 1,100 miles.<sup>70</sup> With this capability the Apache can self-deploy into the contingency area of operation to set the conditions for the employment of light infantry, or occupy support by fire positions in support of forced entry airborne/air assault operations. "Set aside the fact that you don't have an airfield to bring your Bradley's or tanks in, you've got the Apache," said MG Anderson. "They can ferry themselves to any theater just about anywhere, and they don't have to be air-dropped in. They can be there in conjunction with the attack." But MG Anderson acknowledged that self-deploying Apaches directly into battle is not without its challenges. "That's a very, not difficult but delicate operation to orchestrate, but we can do it. We've demonstrated that."<sup>71</sup>

The Comanche (RAH-66) is the Army's next generation helicopter designed to perform the armed and light attack reconnaissance mission.<sup>72</sup> It is uniquely designed to support all combat operations, but has several features which make it ideal to support contingency operations. The Comanche was designed to deploy quickly with minimal logistics. The RAH-66 folds and "kneels" to fit U.S. Air Force transports: eight in a C-5, four in a C-17, three in a C-141 or one in a C-130. The RAH-66 can be ready to fight about twenty minutes after the airlifter touches down. Today's Cobra and Apache take hours to unload and reassemble.<sup>73</sup> When in support of ground



operations, the RAH-66 requires three soldiers to rearm and refuel with 500 cannon rounds, 6 missiles and 217 gallons of fuel in less than 12 minutes.<sup>74</sup>

Similar to the Apache, the Comanche has the ability to self deploy into a theater of operations. From the continental United States, it can be on hand to support contingency forces in Europe in 24 hours and southwest Asia in 30 hours.<sup>75</sup>

Attack aviation has limitations, i.e., weather, logistics and maintenance, yet it continues to improve its lethality and flexibility as it becomes more integrated into contingency task forces as a maneuver force. It is an important force projection player with multiple options for employment into the tactical plan. Today's AH-64 Apaches and the next generation Comanche's rapid deployability and lethality will make it a critical part of forced or early entry contingency operations.

#### Strategic Airlift in Support of Contingency Operations.

The C-17 Globemaster III is the newest Air Force transport aircraft. It is designed to ferry troops and equipment over strategic distances before landing on and taking off from unimproved airstrips. This capability means that so long as U.S. forces control at least one airfield close to the fight, the United States can fly in heavy ground combat vehicles, such as the M1-series Abrams main battle tank and the M2-series Bradley Fighting Vehicle, to support light contingency forces.<sup>76</sup>



The U.S. Air Force has received more than 35 of its programmed 120 C-17 Globemaster III aircraft. The C-17 combines the best capabilities of previous airlifts into a single platform. It can range strategic distances of more than 3,200 nautical miles and can air-drop cargo and airborne personnel. Its most significant feature, however, is the ability to take off and land on unpaved airstrips less than 3,000 feet long. In comparison, the C-5 requires 5,000 feet of paved runway. This enhanced capability enables the C-17 aircraft to land cargo and heavy armored platforms almost anywhere in the world on extremely short notice.<sup>77</sup>

This aircraft has changed the way the Army views contingency force “flyaway packages”. In 18 hours, the Immediate Ready Company (IRC) from Fort Stewart, Georgia’s, 3<sup>rd</sup> Infantry Division (Mechanized), consisting of four M1A1 Abrams tanks and four M2A2 Bradley fighting vehicles, can be in the air on eight C-17 aircraft to deploy to any location in the world. It also includes a command and control element, as well as a support element that has two fuel Heavy Expanded Mobility Tactical Trucks (HEMTTs), one cargo HEMTT and one ambulance.<sup>78</sup>

With an additional 22 C-17 sorties, a battalion task force combined with the IRC can be deployed with 48 hours of notification with a combined combat power of 14 M1A1 tanks, 15 Bradley fighting vehicles and 335 soldiers. These flyaway packages bring significant combat power to any theater where C-17 aircraft can land.<sup>79</sup>



### USMC LAV-25.

A final option to fill the void of light armor is with the task organization of USMC LAV-25 equipped units to U.S. Army contingency forces. The USMC LAV-25 is an eight-wheeled light armored vehicle that can be configured with a 25mm automatic cannon, heavy mortars, assault guns (currently up to 105mm), and enhanced command and control equipment.<sup>80</sup>

The LAV produced by General Motors of Canada is modified with thermal imagery sights, an improved fire control system, reactive armor, and digital burst communications for secure operations over long distances.<sup>81</sup>

The LAV-25 has a Delco two-man turret armed with a 25mm M242 Chain Gun, a 7.62mm M240 coaxial machine gun and a pintle mount for an M60 7.62mm machine gun. Mounted either side of the turret is a bank of M257 smoke grenade launchers. A stabilization system allows the 25mm cannon to be aimed while the vehicle is moving cross-country.<sup>82</sup> Additionally, the LAV-25 serves as a light armored personnel carrier for infantry that provides the commander with tactical and operational mobility.

The LAV is air-deployable in current U.S. Air Force cargo transports. The C-5A can carry eight; the C-17, six; the C-141; two, and the C-130, one. The USMC, CH-53E transport helicopter or similar Army aircraft can transport one LAV-25 in the sling position<sup>83</sup>. In February 1987, a LAV-25 was successfully LAPESed (Low Altitude Parachute Extraction System) from a C-



130 transport aircraft and was operationally ready within 12 ½ minutes of landing. The vehicle was also air-dropped from 1,500 ft and was again operationally ready within 12 ½ minutes.<sup>84</sup> See figure 3-2 for LAV-25 specifications.

Figure 3-2.

**Key Characteristics  
of the LAV-25**

Crew:	3 + 6
Configuration:	8 X 8
Combat weight:	12,792 kg
Unloaded weight:	10, 932 kg
Length:	6.393 m
Width:	2.499 m
Height:	2.693 m
Max road speed	100 km/h
Max range:	668km
Gradient:	60%
Side slope:	30%
Engine:	GM Detroit Diesel 6V-53T, 6-cylinder
Armament:	1 X 25 mm M242 cannon (main) 1 X 7.62 mm M240 MG (Coaxial) 1 X 7.62 mm M60 or 1 X .50 cal M2 MG
(Optional)	2 X 4 m257 smoke grenade launchers

Source: Jane's, Armour and Artillery 1996-97.<sup>85</sup>

Limitations of the LAV-25 are those common with most light armored wheeled systems: survivability, lethality and mobility. Of these three only mobility is subject to debate. It is generally accepted that battle tanks should be tracked and not wheeled. But when it comes to light armored vehicles there is no lack of arguments for them having wheels instead of tracks<sup>86</sup>.

Well designed wheeled armored vehicles have much the same capability for



moving cross-country as tanks. On roads, even poorly designed wheeled vehicles are more efficient than tracked vehicles. Wheeled vehicles use less fuel. They can also cover long distances faster and with far less fatigue for their occupants because they are free of the vibrations generated by the tracks of tracked vehicles.<sup>87</sup>

A lesson learned from Operation Uphold Democracy, Haiti, recommends the Marine LAV-25 as an exceptionally versatile vehicle in an OOTW urban environment. During Operation Uphold Democracy, MARFOR deployed both amphibious assault vehicles (AMTRACs) and LAV-25s as part of their landing force. The AMTRACS were not suited to maneuver in an urban environment and were used only as static security. The LAV-25s, however, proved ideal armored vehicles to conduct mounted and support dismounted patrols in the constrictive urban environment. Additionally, they provided the tactical commander the capability to rapidly shift combat power in the event an intimidating presence was needed, to conduct QRF missions, or convoy escort.<sup>88</sup>

The Army's BFV and M1A1 tank proved too heavy for rapid movement in the tight streets of Port Au Prince. Overall, tracked vehicles lacked maneuverability and tore up the streets. Although maneuverable, the hard-shell HMMWV is not armored enough to respond to a violent situation<sup>89</sup>.



## **Part 6. Conclusions.**

Cancellation of the Armored Gun System (AGS) and the deactivation of the 3-73<sup>rd</sup> Armor Battalion has left the U.S. Army force structure without light armor to support contingency operations. Because of this, the contingency force commander and planner are faced with the question of "What do we do now?" This monograph examined this question and discussed solutions to fill the void left by light armor with technology and the efforts of a joint/combined arms team.

To understand the extent of the void left by light armor this monograph examined the roles, strengths, and limitations of light infantry and light armor in contingency operations. Operation Just Cause and lessons learned from Combat Training Centers (CTCs) were examined to review how light armor has been used effectively, and to identify current trends in the employment of light infantry and light armor as a combined arms team. It examined the Army's ability to fill the void of light armor with the fielding of the Javelin anti-armor weapon system, employment of the AH-64 Apache and RAH-66 Comanche attack helicopters, the EFOGM and LOSAT weapons systems, and the strategic airlift of the IRC. Finally it examined the use of USMC LAV-25s to augment a U.S. Army contingency force.



This monograph concludes that the U.S. Army's cancellation of the AGS and the deactivation of the 3-73<sup>rd</sup> Armor Battalion has not reduced its ability to conduct contingency operations. Employment of our technological advantages in anti-armor weapons, attack aviation, and strategic airlift can set the conditions for the use of light forces in any contingency scenario. If light armor is required for forced/early entry operations, a USMC LAV-25 organization is an appropriate force to augment U.S. Army contingency forces. It is air droppable, provides ample mobility, firepower and protection to the force, and proved to work effectively with U.S. Army light infantry forces during Operation Just Cause. The challenge to commanders and planners is to operate as a heavy/light combined arms team and understand how to employ our technological advantage. The monograph supports these findings in its analysis of current technology, future technology, the USMC LAV-25, and of the joint/combined arms team in contingency operations.

Current technology. Direct fire capabilities of the Javelin and the AH-64 Apache give the contingency force the ability to quickly set the conditions on an airfield objective to facilitate the strategic deployment of the IRC. The Javelin will deploy with the combat arms forces (12 per infantry rifle company), but the Apache has the option of either self-deploying into the theater, or operating from a intermediate staging base to support the contingency operation. Enhancements to strategic airlift, by the C-17 transport, are providing the commander more flexibility to deploy the IRC,



and improves the commander's ability to quickly seize the initiative by delivering the IRC to the operation in eight sorties.

Future Operations. Technology continues to improve the capabilities and lethality of light contingency forces. The RAH-66 Comanche has capabilities specifically designed to support contingency operations. It can self-deploy into theater to set the conditions on an objective or to overwatch with fires forced/early entry operations, and can be airlifted on C-130, C-141B, C-5B, and C-17 aircraft. On arrival it can be readied for combat missions within twenty minutes. Although the EFOGM and LOSAT are still in the evaluation stages, they will both bring unique capabilities to contingency forces that further eliminate the enemy armor threat and set the conditions of the deployment of the IRC.

USMC LAV-25. Contingency operations will continue to be inherently joint. The U.S. Army and USMC proved their interoperability during Operation Just Cause and should be expected to continue to do so on future operations. The LAV-25 can provide the tactical commander mobility, firepower, and protection during forced or early entry operations. Placing USMC LAV-25 organizations under operational control of an Army contingency force commander is a viable solution to fill the void of light armor. With thorough planning this relationship can extend for the duration of the operation, or until relieved by the IRC.



Combined Arms Team. Light infantry and armor will continue to conduct contingency operations as a combined arms team. Therefore, our training should focus towards improving light infantry and armor operations. CTC lessons learned consistently address heavy/light issues that need improvement. To prepare to fight as a combined arms team in future contingency operations, commanders must go beyond the annual CTC rotation to conduct heavy/light training. For example: establish company training exchange programs, or combined CPXs to refine commanders and staff's implementation and knowledge of heavy/light operations. Additionally needed is the increase of USMC light armored forces integrated into CTC rotations at the JRTC, where USMC LAV-25 and U.S Army light forces can experience LIC, MOUT, or stability and support operations (SASO) contingency scenarios.

Technology will never be the one hundred percent fix in reducing the risk faced by contingency forces. The post-Cold War world is much more ambiguous, and it is difficult to plan for future war when the threat is ill-defined and global. There are limits to our technology. All the answers do not rest with technology. Many answers rely on the professional application of significant amounts of conventional ground combat power.<sup>90</sup>

So how do we fill the light armor void in future contingency operations? The answer rests with the commander and planner who recognize the benefits of technology, as examined in this monograph, and incorporate it



into a plan with the intent of maximizing the technological advantage, while understanding the implications of its limitations.



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